

## Ovarian Cancer Incidence in Iran and the World

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### Abstract

**Introduction:** Ovarian cancer ranks the 8<sup>th</sup> cancer causing death in the world. This study aims to compare incidence rate of ovarian cancer in Iran with other countries.

**Materials and methods:** Data from International Agency for Research on Cancer's GLOBOCAN 2008 database is used to compare ovarian cancer age standard incidence rate from different parts of the globe considering the developing and developed regions.

**Results:** Iran is among countries with low incidence of ovarian cancer and an age standard incidence rate of 3.07 in 2005 and 3.1 in 2008.

**Conclusion:** Ovarian cancer is the most common gynecologic cancer in Iran. Various risk and protective factors of ovarian cancer might be clarified in Iran in order to prevent increasing incidence of this cancer in the future. At the present this disease is significant considering its disease burden.

**Key words:** Ovarian cancer, incidence, disease, burden, Iran.

### Introduction

Ovarian cancer ranks the 8<sup>th</sup> cancer causing death worldwide<sup>(1)</sup>. The number of ovarian cancer patients in the world was near 192,000 cases in 2000 and 200,000 in 2008 accounting to 4% of all female cancers and ranking as the sixth prevalent female cancer<sup>(2)</sup>. Mortality of about 140,000 among ovarian cancer patients in 2008 reveals a 50% case fatality rate for this disease<sup>(3,4)</sup>. Survival of ovarian cancer (all stages) is estimated to be about 45.9%<sup>(2)</sup>. Three percent of female cancers in USA is ovarian cancer<sup>(5)</sup> and this cancer is the ninth female cancer regarding the incidence<sup>(6)</sup>. Also the high fatality of ovarian cancer has led it to be the fifth female cancer cause of death in this country<sup>(7)</sup>.

In Iran ovarian cancer ranks as the 9<sup>th</sup> most frequent cancer among women<sup>(8)</sup> and is known to be the 16<sup>th</sup> cause for the cancer burden<sup>(9)</sup>. Many factors affect the incidence of ovarian cancer in different regions of the world<sup>(4)</sup>. The main risk and protective factors which change ovarian cancer incidence rate in different countries are as follow. Low parity versus multiparity, breast feeding, oral contraceptive usage, fertility treatment, hormone replacement therapy, family history of breast and/or ovarian cancer, diet, obesity, life expectancy,

exposure to environmental toxins, talcum powder, white race, education status and other unknown factors<sup>(4,10-19)</sup>.

This study was performed to evaluate the age standard incidence rate (ASR) of ovarian cancer in Iran and to compare it with other regions of the world. In this regard future trends, main risk factors and appropriate epidemiologic interventions are discussed.

### Materials and Methods

In the first step, the frequency of new female cancer cases and the disease burden were reviewed based on the 2005 cancer registry data published by the ministry of health and medical education of the Islamic Republic of Iran. In the second part of the study, data from International Agency for Research on Cancer's GLOBOCAN 2008 database was used to compare ovarian cancer age standard incidence rates (ASR) from different countries including a comparison of developed versus less developed and high human development area versus low human development area. Discussion is focused on probable factors causing the observed patterns.

## Results

In 2005, a total of 24498 new cancer cases in female Iranian population were reported. The total number of gynecological cancer cases was 1923 (7.8% of total female cancer cases). On the other hand, 793 new ovarian cancer cases which was equal to 3.2% of all female cancers were reported. So if just female gynecologic cancers are considered, the most common site was ovary including 41.2% of cases.

The second and third most common gynecologic cancers were endometrium and cervix, respectively (Table 1).

Ovarian cancer ASR, reported by GLOBOCAN 2008 in selected regions is shown in table 2.

## Discussion

Ovarian cancer is more prevalent in developed, modern and industrial countries especially in America and northern and western European countries<sup>(20)</sup>. For instance, high incidence rate is observed in USA, Canada, Australia, France, Poland, Spain and Italy. Low incidence countries are china, India and Thailand<sup>(21)</sup>.

Iranian studies have revealed this country as a low incidence area, with ASR of 3.07 (2004) and 3.6 in 2008, with epithelial type as the most common histopathology<sup>(4, 8, 9)</sup>. Although the etiology of ovarian cancer is not clear, various causes are considered regarding the frequent incidence of this disease in developed countries<sup>(22)</sup>. The most important factors are diet, obesity and white race. In the high income and developed countries more meat is consumed, less physical activity is performed, obesity is frequent due to the modern life style and there is a high fat and carbohydrate intake as fast food usage which all may increase the risk of ovarian cancer<sup>(4, 23)</sup>.

Protective factors including multiparity, breast feeding and oral contraceptive pills are effective in changing epidemiology of ovarian cancer<sup>(4, 24)</sup>. Breast feeding following the delivery is a costume and is continued for about 2 years in islamic countries. In Iran, as a country with low ASR of ovarian cancer, breast feeding is more common and favorable in comparison with western and European countries<sup>(25)</sup>.

The Iranian ministry of health has reported 2.1 births for each woman in reproductive age in 2008. The estimate of oral contraception usage is 20.9%<sup>(4)</sup>. These factors might reduce the ASR of ovarian cancer in Iran. The trend of increasing obesity, decreasing physical activity, more fat intake and later marriage and reduction of parity and breast feeding in our country, should be considered and prevented to control the future abrupt increase of ovarian cancer incident. Ovarian cancer is the most common gynecologic cancer in Iran, and although Iran is a in the low incidence area for this cancer in the world, this makes it a disease burden.

A limitation of this study was the youth of the cancer registry and data gathering system in Iran, which has started from 2000<sup>(26)</sup>. Undoubtedly, in western countries data gathering and cancer reporting have better coverage, which is expected to cover only 80% of cases in Iran.

## Conclusion

Ovarian cancer is the most common gynecologic cancer in Iran. Various risk and protective factors of ovarian cancer might be clarified in Iran in order to prevent increasing incidence of this cancer in the future. At the present this disease is significant considering its disease burden.

**Table 1:** The frequency of different gynecologic cancer sites among Iranian females (%), 2005.

Frequency	41.2	26	2.9	22.3	2.8	2.4	0.7	1.7	100
Site	Ovary	Endometrium	Uterus, NOS	Cervix	Vagina	Vulva	Other female genital organs	Placenta	Total

**Table 2:** Ovarian Cancer age standard incidence rate for different regions of the world, 2008.

Region	ASR	Region	ASR
Iran	3.1	South- Eastern Asia	6.7
Developed area	9.3	South- central Asia	5.5
Less developed area	4.9	Western Asia	4.8
Very high human development	8.5	Australia	7.8
High human development area	8	USA	8.8
Medium human development area	4.9	Africa	4.2
Low human development area	3.6	Europe	10.1
Asia	5.1	Canada	7.9
Eastern Asia	4.3	World	6.3

ASR: age standard incidence rate per 100.000 women.

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